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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,847	09/06/2000	Yasuhiro Ishii	1560-0348P	9788

7590 03/10/2004
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EXAMINER

JOYCE, WILLIAM C

ART UNIT	PAPER NUMBER
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3682

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/655,847

Applicant(s)

ISHII ET AL.

Examiner

William C. Joyce

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the amendment filed January 23, 2004 for the above identified patent application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanazawa et al. (US Patent 5,044,454).

Kanazawa illustrates an electric motor (32), a worm shaft (224) having a worm (230), a steering shaft (200) having a worm gear (214), a biasing member (231) for biasing the worm towards the worm gear, a concave member (227) accepting the bearing, a housing (40) for housing the bearing and the concave member.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 7, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eda et al. (US Patent 6,044,723) in view of Hayashi et al. (US Patent 4,790,202).

Eda et al. discloses a power steering device connected to a steering shaft (2), the power steering device comprising a worm shaft (30) having a worm (30a), the worm meshing with a worm gear (13), wherein the worm gear is fixed to the steering shaft. Eda et al. does not appear to disclose the claimed biasing arrangement for biasing the worm towards the worm gear.

The prior art to Hayashi et al. teaches the claimed biasing arrangement for biasing worm (8) towards a worm gear (7) for reducing backlash of the gear set. Specifically, the prior art teaches a biasing member (13) urging, via a bearing (11), the worm shaft toward the worm wheel, a concave portion (see fig. 3) accepting the bearing, a housing (9) for housing the bearing and the concave member, the bearing capable of being deflected into the concave member, and a space established between the concave member and the biasing member. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the steering mechanism of Eda et al. with the biasing arrangement taught by Hayashi et al., motivation being to provide adjustable means for reducing the backlash between the meshing gears.

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5. Claims 1-4, 7, 9, 10, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleyard (WO 99/11502) in view of Hayashi et al. (US Patent 4,790,202).

Appleyard discloses a power steering device connected to a steering shaft, the power steering device comprising a worm shaft having a worm (8), the worm meshing with a worm gear (10), wherein the worm gear is fixed to the steering shaft. Appleyard does not appear to disclose the claimed biasing arrangement for biasing the worm towards the worm gear.

The prior art to Hayashi et al. teaches the claimed biasing arrangement for biasing worm (8) towards a worm gear (7) for reducing backlash of the gear set. Specifically, the prior art teaches a biasing member (13) urging, via a bearing (11), the worm shaft toward the worm wheel, a concave portion (see fig. 3) accepting the bearing, a housing (9) for housing the bearing and the concave member, the bearing capable of being deflected into the concave member, and a space established between the concave member and the biasing member. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the steering mechanism of Appleyard with the biasing arrangement taught by Hayashi et al., motivation being to provide adjustable means for reducing the backlash between the meshing gears.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleyard (WO 99/11502) and Hayashi et al. (US Patent 4,790,202) as applied to

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claims 1-4, 7, 9, 10, 13, and 14 above, and further in view of Eda et al. (US Patent 6,044,723).

Appleyard does not disclose the steering shaft (9) being connected to a steering wheel, however it was well known to provide a power steering mechanism for driving a steering wheel shaft. For example, the prior art to Eda et al. (see Fig. 1) clearly illustrates a steering wheel shaft being driven by a power steering arrangement. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the power steering arrangement of Appleyard for driving a steering wheel shaft, as taught by Eda et al., motivation being to provide a relatively inexpensive means of attaching a power steering device to a vehicle.

Response to Arguments

7. Applicant's arguments filed 1/23/04 have been fully considered but they are not persuasive. Specifically, examiner disagrees with applicants' argument that shaft 200 of Kanazawa et al. is not a steering shaft. Shaft 200 is part of a steering mechanism and therefore is considered a steering shaft.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Note the power steering device attached to a steering wheel shaft of Chikuma ('438).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Joyce whose telephone number is (703) 305-5114. The examiner can normally be reached on Monday - Thursday 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci can be reached on (703) 308-3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William C. Joyce 3/4/04